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APPLICATION NUMBER: 60/458,643

FILING DATE: March 28, 2003

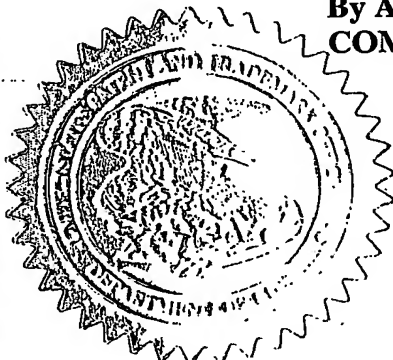
RELATED PCT APPLICATION NUMBER: PCT/US04/09618

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PROVISIONAL APPLICATION COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION under 37 CFR 1.53(c).

DOCKET NUMBER: B01075.70040
Express Mail Label No. EV 208 517 808 US
Date of Deposit: March 28, 2003

INVENTOR(S)/APPLICANT(S)

LAST NAME	FIRST NAME	MIDDLE INITIAL	RESIDENCE (CITY AND EITHER STATE OR FOREIGN COUNTRY)
Stevens-Wright	Debbie		North Andover, MA

☐ Additional inventors are being named on the separately numbered sheets attached hereto.

TITLE OF THE INVENTION (280 characters max)

METHOD AND APPARATUS FOR SELECTING TEMPERATURE/POWER SET POINTS IN ELECTROPHYSIOLOGY PROCEDURES

CORRESPONDENCE ADDRESS

CUSTOMER NUMBER:

23628

ENCLOSED APPLICATION PARTS (check all that apply)

☒ Specification - Number of Pages = 11☐ Drawing(s) - Number of Sheets☐ Application Data Sheet, See 37 CFR 1.76☒ Return receipt postcard

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No☐ Yes, the name of the U.S., Government Agency and the Government Contract Number are:☐ Other:

METHOD OF PAYMENT (check all that apply)

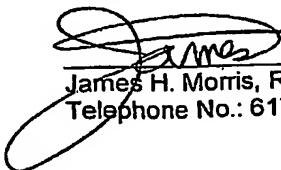
☒ A check is enclosed to cover the Provisional Filing Fees.☐ The Commissioner is hereby authorized to charge any additional fees or credit overpayment to Deposit Account 23/2825. A duplicate of this sheet is enclosed.☐ Small Entity Status is claimed.

PROVISIONAL FILING FEE AMOUNT

\$ 160.00

Respectfully submitted,

March 28, 2003
Date


James H. Morris, Reg. No. 34,681
Telephone No.: 617-720-3500

TITLE: Algorithm for determining target temperature
 for power control ablation

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to or target power for power control ablation

Dependent

Depending upon the surface extension of electrode toward the boundaries of the ablation domain, the power requirements and the temperature sensing requirements will vary from electrode design. In addition, the flow conditions and proximity of the electrode to the tissue surface will affect these requirements. Traditionally, a single set point has been applied across varying flow conditions, geometries and tissue electrode gaps. The proposed concept would include an algorithm in which the set point's (power or temperature) would depend upon

Impedance
 Tissue Gap
 Flow

The impedance at the start of ablation is dependent upon the surface geometry of the electrode. The impedance increases as the outer surface of the electrode extends towards the boundary of the ablation domain. Larger electrodes, requiring more power and have lower impedances.

*Larger tissue gaps, predominantly are beneficial at higher flows and smaller gaps beneficial at lower flows.

The difference between tissue temperature and electrode temperature increases with increasing flow. Therefore a given design will require a lower set point at higher flows.

Below is an example of how the FEA analysis can be used to predict the temperature setpoint for known impedance, electrode geometry, tissue gap, flow rate and flow.

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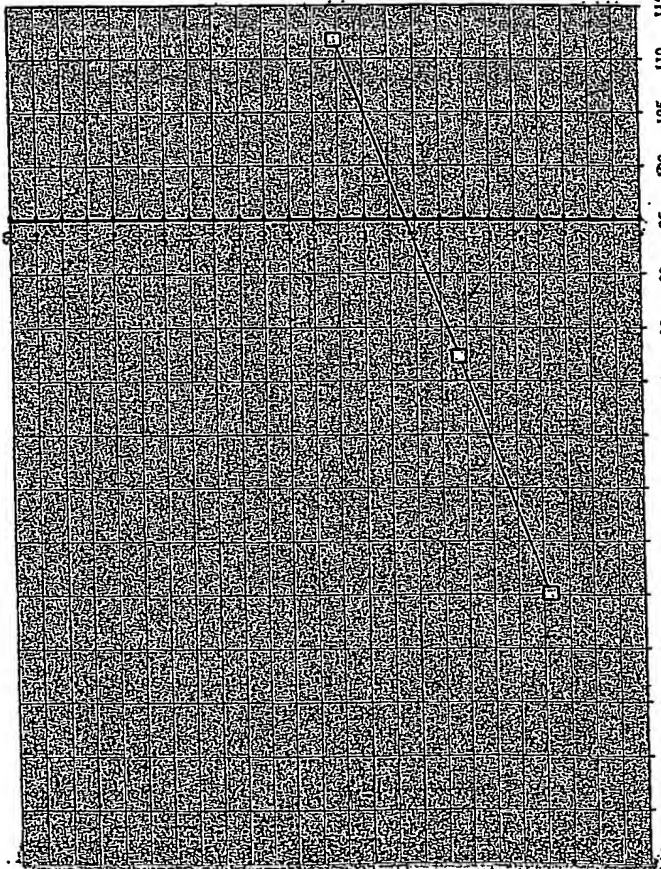
TITLE *Algebraic Temperature / Power Select*

TITLE *4*

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Algebraic Temperature / Power Select

Algebraic Temperature / Power Select



Temperature

Algebraic Temperature / Power Select

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TITLE: *Algorithms - Temperature & Power Subst*

TITLE

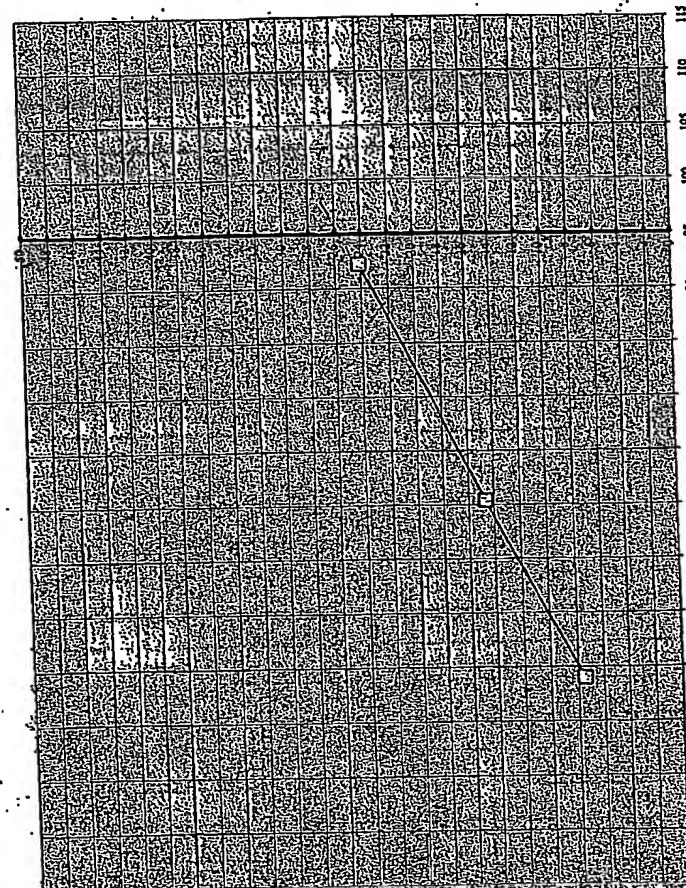
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CO-processor input

Algorithms - Temperature & Power Subst



Temperature

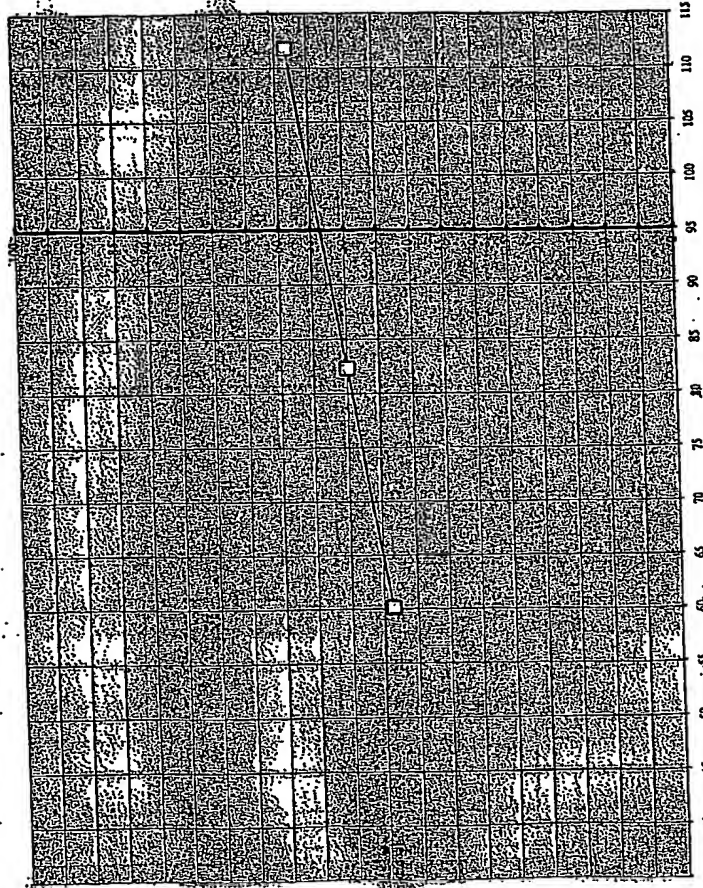
Algorithms - Temperature & Power Subst

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TITLE *Pattern - Temperature & Power Spect*

From Page No. *12-111-0101-1 of 1011-01*

Minimum Breasted Temperature - Maximum Tissue Temperature
0 mm/sec



Tissue Temperature

Maximum Tissue Temperature

No.

TITLE *Algorithm Temperature / Power Select*

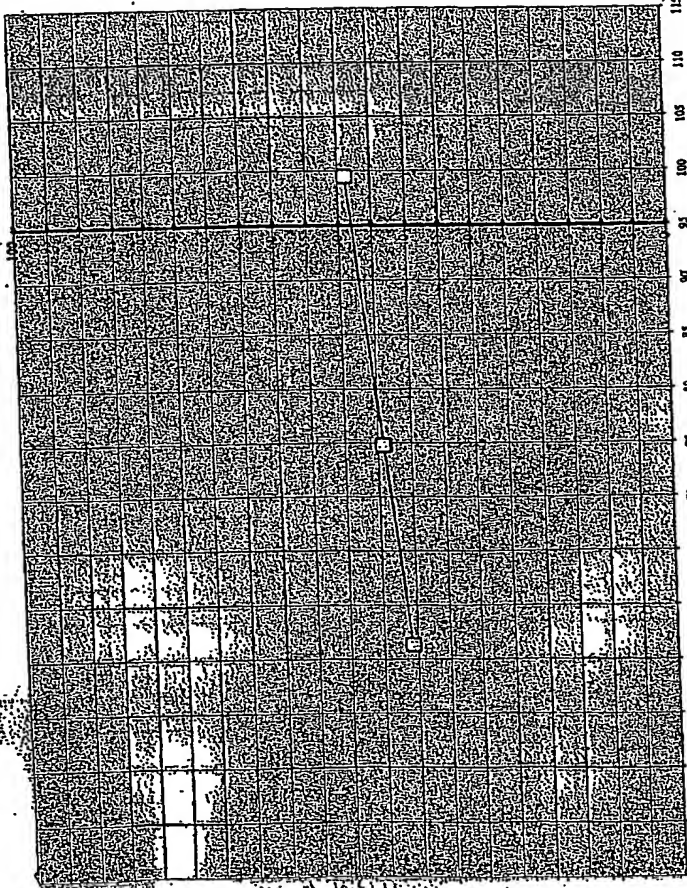
TITLE *6*

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Maximum Temperature

Maximum Temperature



Temperature

Power

Maximum Temperature

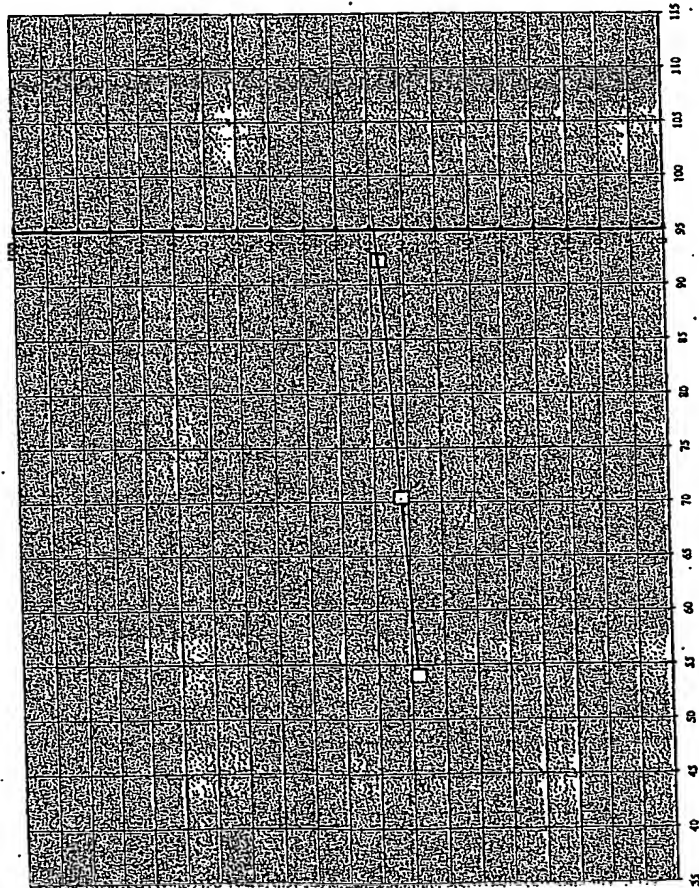
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TITLE Algorithms Temperature / Power Select

ॐ नमो भगवते वासुदेवाय ॥

Vacuum, Electric Temperature, Vacuum, Tissue Temperature

W. J. Morgan, Sup. of Ind. Sec.



Tissue Temperature

De Leeuw & L. J. H. van der Linde

अथिदःप्राचुरातःप्रोचुरातःप्रोचुरातः

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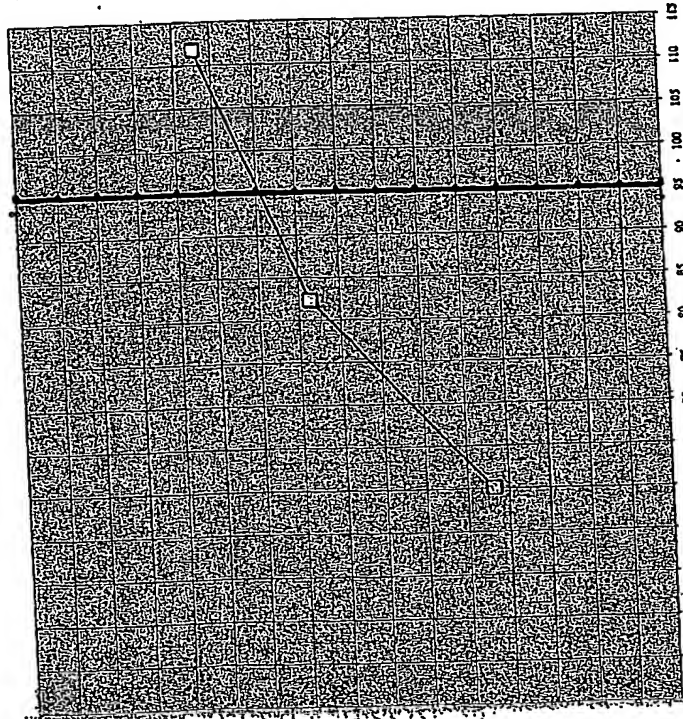
TITLE: *Algorithm in Temperature / Power Select*

TITLE

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From Pa

Temperature / Power Select



Power C. & Power Select

Tissue Temperature

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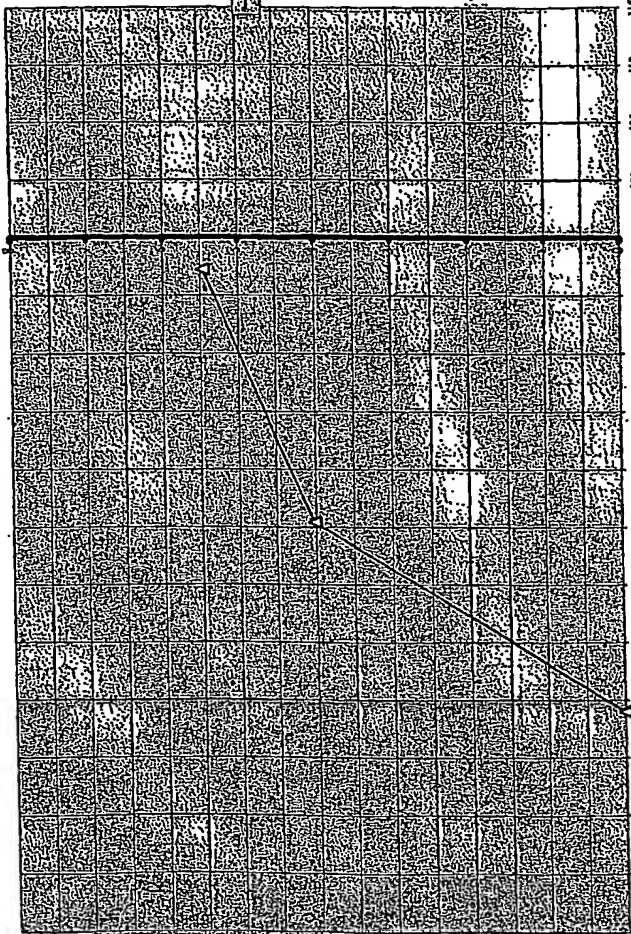
TITLE *Robert E. Algorithm - Temperature / Power*

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TITLE _____

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Robert E. Algorithm - Temperature / Power



Tissue Temperature

Robert E. Algorithm - Temperature / Power

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Witness

TITLE Algorithm - Temperature / Power Select

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Electrode - Ablation Prescription (Preliminary)					
Flow	Impedance	Tissue Gap	Temperature Set Point	Power Set Point	Expected Lesion Generation
mm/sec	ohms	in.	°C	W	mm
30	83	.009 Embedded	54.0	18.8	4.93
55	83	.009 Embedded	48.0	22.5	5.30
85	83	.009 Embedded	44.5	26.0	5.65

The preceding curves were generated from an FEA analysis where the applied potential was ranged at three flow rates (30mm/sec, 55mm/sec, 85 mm/sec). The maximum allowable tissue temperature was chosen to be ~~95°C~~ 95°C. The set points were taken from plots of (Power vs Maximum tissue temperature) and (Maximum electrode temperature vs Maximum tissue temperature).

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